

HYS-31CIP  
SEQUENCE LISTING

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<120> METHODS AND MATERIALS RELATING TO ALPHA-2-MACROGLOBULIN-LIKE POLYPEPTIDES AND POLYNUCLEOTIDES

<130> HYS-31CIP

<140> NOT YET ASSIGNED

<141> 2001-01-08

<150> 09/649,167

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<170> PatentIn version 3.0

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Asp	Val	Lys	Phe	Thr	Val	Thr	Leu	Glu	Thr	Lys	Asp	Lys	Thr	Gln	Lys	
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Phe	Leu	Val	Pro	Pro	Pro	Ala	Gly	Gly	Thr	Glu	Glu	Val	Ala	Thr	Ile	
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Val	Leu	Ile	Gln	Arg	Gln	Gly	Asn	Gly	Thr	Phe	Val	Gln	Thr	Asp	Lys	
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Pro	Leu	Tyr	Thr	Pro	Gly	Gln	Gln	Val	Tyr	Phe	Arg	Ile	Val	Thr	Met	
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Glu	Gln	Gly	Ile	Val	Asp	Leu	Ser	Phe	Gln	Leu	Ala	Pro	Glu	Ala	Met	
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Leu	Gly	Thr	Tyr	Thr	Val	Ala	Val	Ala	Glu	Gly	Lys	Thr	Phe	Gly	Thr	
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Phe	Ser	Val	Glu	Glu	Tyr	Val	Leu	Pro	Lys	Phe	Lys	Val	Glu	Val	Val	
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Glu	Pro	Lys	Glu	Leu	Ser	Thr	Val	Gln	Glu	Ser	Phe	Leu	Val	Lys	Ile	
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Cys	Cys	Arg	Tyr	Thr	Tyr	Gly	Lys	Pro	Met	Leu	Gly	Ala	Val	Gln	Val	
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Thr	Arg	Ser	Phe	Leu	Gly	Ile	His	Arg	Leu	Asn	Gly	Pro	Leu	Lys	Cys	
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Ala	Ser	Pro	Asp	Gln	Glu	Ile	Ser	Phe	Ser	Tyr	Tyr	Leu	Ile	Gly	Lys	
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gac gca aaa acc cac cac tgg aac atc aca gct gtc aaa ttg ggt cac Asp Ala Lys Thr His His Trp Asn Ile Thr Ala Val Lys Leu Gly His 850 855 860			2592
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Gln	Lys	Phe	Ile	Phe	Ile	Asp	Pro	Lys	Asn	Ile	Gln	Asp	Ala	Leu		
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Lys	Trp	Met	Ala	Gly	Asn	Gln	Leu	Pro	Ser	Gly	Cys	Tyr	Ala	Asn		
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1100						1105					1110					
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Gly	Lys	Asp	Val	Asp	Asp	Pro	Met	Val	Ser	Gln	Gly	Leu	Arg	Cys		
1130						1135					1140					
ctc	aag	aat	tcg	gcc	acc	tcc	acg	acc	aac	ctc	tac	aca	cag	gcc	3474	
Leu	Lys	Asn	Ser	Ala	Thr	Ser	Thr	Thr	Asn	Leu	Tyr	Thr	Gln	Ala		
1145						1150					1155					
ctg	ttg	gct	tac	att	ttc	tcc	ctg	gct	ggg	gaa	atg	gac	atc	aga	3519	
Leu	Leu	Ala	Tyr	Ile	Phe	Ser	Leu	Ala	Gly	Glu	Met	Asp	Ile	Arg		
1160						1165					1170					
aac	att	ctc	ctt	aaa	cag	tta	gat	caa	cag	gct	atc	atc	tca	gga	3564	
Asn	Ile	Leu	Leu	Lys	Gln	Leu	Asp	Gln	Gln	Ala	Ile	Ile	Ser	Gly		
1175						1180					1185					
gaa	tcc	att	tac	tgg	agc	cag	aaa	cct	act	cca	tca	tcg	aac	gcc	3609	
Glu	Ser	Ile	Tyr	Trp	Ser	Gln	Lys	Pro	Thr	Pro	Ser	Ser	Asn	Ala		
1190						1195					1200					
agc	cct	tgg	tct	gag	cct	gcg	gct	gta	gat	gtg	gaa	ctc	aca	gca	3654	
Ser	Pro	Trp	Ser	Glu	Pro	Ala	Ala	Val	Asp	Val	Glu	Leu	Thr	Ala		
1205						1210					1215					
tat	gca	ttg	ttg	gcc	cag	ctt	acc	aag	ccc	agc	ctg	act	caa	aag	3699	
Tyr	Ala	Leu	Leu	Ala	Gln	Leu	Thr	Lys	Pro	Ser	Leu	Thr	Gln	Lys		
1220						1225					1230					
gag	ata	gcg	aag	gcc	act	agc	ata	gtg	gct	tgg	ttg	gcc	aag	caa	3744	
Glu	Ile	Ala	Lys	Ala	Thr	Ser	Ile	Val	Ala	Trp	Leu	Ala	Lys	Gln		
1235						1240					1245					

HYS-31CIP

cac aat gca tat ggg ggc ttc tct tct act cag gat act gta gtt	3789
His Asn Ala Tyr Gly Gly Phe Ser Ser Thr Gln Asp Thr Val Val	
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gct ctc caa gct ctt gcc aaa tat gcc act acc gcc tac atg cca	3834
Ala Leu Gln Ala Leu Ala Lys Tyr Ala Thr Thr Ala Tyr Met Pro	
1265 1270 1275	
tct gag gag atc aac ctg gtt gta aaa tcc act gag aat ttc cag	3879
Ser Glu Ile Asn Leu Val Lys Ser Thr Glu Asn Phe Gln	
1280 1285 1290	
cgc aca ttc aac ata cag tca gtt aac aga ttg gta ttt cag cag	3924
Arg Thr Phe Asn Ile Gln Ser Val Asn Arg Leu Val Phe Gln Gln	
1295 1300 1305	
gat acc ctg ccc aat gtc cct gga atg tac acg ttg gag gcc tca	3969
Asp Thr Leu Pro Asn Val Pro Gly Met Tyr Thr Leu Glu Ala Ser	
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ggc cag ggc tgt gtc tat gtg cag acg gtg ttg aga tac aat att	4014
Gly Gln Gly Cys Val Tyr Val Gln Thr Val Leu Arg Tyr Asn Ile	
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ctc cct ccc aca aat atg aag acc ttt agt ctt agt gtg gaa ata	4059
Leu Pro Pro Thr Asn Met Lys Thr Phe Ser Leu Ser Val Glu Ile	
1340 1345 1350	
gga aaa gct aga tgt gag caa ccg act tca cct cga tcc ttg act	4104
Gly Lys Ala Arg Cys Glu Gln Pro Thr Ser Pro Arg Ser Leu Thr	
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ctc act att cac acc agt tat gtg ggg agc cgt agc tct tcc aat	4149
Leu Thr Ile His Thr Ser Tyr Val Gly Ser Arg Ser Ser Ser Asn	
1370 1375 1380	
atg gct att gtg gaa gtg aag atg cta tct ggg ttc agt ccc atg	4194
Met Ala Ile Val Glu Val Lys Met Leu Ser Gly Phe Ser Pro Met	
1385 1390 1395	
gag ggc acc aat cag tta ctt ctc cag caa ccc ctg gtg aag aag	4239
Glu Gly Thr Asn Gln Leu Leu Leu Gln Gln Pro Leu Val Lys Lys	
1400 1405 1410	
gtt gaa ttt gga act gac aca ctt aac att tac ttg gat gag ctc	4284
Val Glu Phe Gly Thr Asp Thr Leu Asn Ile Tyr Leu Asp Glu Leu	
1415 1420 1425	
att aag aac act cag act tac acc ttc acc atc agc caa agt gtg	4329
Ile Lys Asn Thr Gln Thr Tyr Thr Phe Thr Ile Ser Gln Ser Val	
1430 1435 1440	
ctg gtc acc aac ttg aaa cca gca acc atc aag gtc tat gac tac	4374
Leu Val Thr Asn Leu Lys Pro Ala Thr Ile Lys Val Tyr Asp Tyr	
1445 1450 1455	
tac cta cca ggt tct ttt aaa tta tct cag tac aca att gtg tgg	4419
Tyr Leu Pro Gly Ser Phe Lys Leu Ser Gln Tyr Thr Ile Val Trp	
1460 1465 1470	
tcc atg aac aat gac agc ata gtg gac tct gtg gca cgg cac cca	4464
Ser Met Asn Asn Asp Ser Ile Val Asp Ser Val Ala Arg His Pro	
1475 1480 1485	



## HYS-31CIP

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ggg agt gtt aac aac tga 4527  
 Gly Ser Val Asn Asn  
 1505

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 <212> PRT  
 <213> Homo sapiens

<400> 4

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Phe Pro Ser Val Gln Lys Val Cys Leu Asp Leu Ser Pro Gly Tyr Ser  
 35 40 45

Asp Val Lys Phe Thr Val Thr Leu Glu Thr Lys Asp Lys Thr Gln Lys  
 50 55 60

Leu Leu Glu Tyr Ser Gly Leu Lys Lys Arg His Leu His Cys Ile Ser  
 65 70 75 80

Phe Leu Val Pro Pro Pro Ala Gly Gly Thr Glu Glu Val Ala Thr Ile  
 85 90 95

Arg Val Ser Gly Val Gly Asn Asn Ile Ser Phe Glu Glu Lys Lys Lys  
 100 105 110

Val Leu Ile Gln Arg Gln Gly Asn Gly Thr Phe Val Gln Thr Asp Lys  
 115 120 125

Pro Leu Tyr Thr Pro Gly Gln Gln Val Tyr Phe Arg Ile Val Thr Met  
 130 135 140

Asp Ser Asn Phe Val Pro Val Asn Asp Lys Tyr Ser Met Val Glu Leu  
 145 150 155 160

Gln Asp Pro Asn Ser Asn Arg Ile Ala Gln Trp Leu Glu Val Val Pro  
 165 170 175

Glu Gln Gly Ile Val Asp Leu Ser Phe Gln Leu Ala Pro Glu Ala Met  
 180 185 190

HYS-31CIP

Leu Gly Thr Tyr Thr Val Ala Val Ala Glu Gly Lys Thr Phe Gly Thr  
195 200 205

Phe Ser Val Glu Glu Tyr Val Leu Pro Lys Phe Lys Val Glu Val Val  
210 215 220

Glu Pro Lys Glu Leu Ser Thr Val Gln Glu Ser Phe Leu Val Lys Ile  
225 230 235 240

Cys Cys Arg Tyr Thr Tyr Gly Lys Pro Met Leu Gly Ala Val Gln Val  
245 250 255

Ser Val Cys Gln Lys Ala Asn Thr Tyr Trp Tyr Arg Glu Val Glu Arg  
260 265 270

Glu Gln Leu Pro Asp Lys Cys Arg Asn Leu Ser Gly Gln Thr Asp Lys  
275 280 285

Thr Gly Cys Phe Ser Ala Pro Val Asp Met Ala Thr Phe Asp Leu Ile  
290 295 300

Gly Tyr Ala Tyr Ser His Gln Ile Asn Ile Val Ala Thr Val Val Glu  
305 310 315 320

Glu Gly Thr Gly Val Glu Ala Asn Ala Thr Gln Asn Ile Tyr Ile Ser  
325 330 335

Pro Gln Met Gly Ser Met Thr Phe Glu Asp Thr Ser Asn Phe Tyr His  
340 345 350

Pro Asn Phe Pro Phe Ser Gly Lys Ile Arg Val Arg Gly His Asp Asp  
355 360 365

Ser Phe Leu Lys Asn His Leu Val Phe Leu Val Ile Tyr Gly Thr Asn  
370 375 380

Gly Thr Phe Asn Gln Thr Leu Val Thr Asp Asn Asn Gly Leu Ala Pro  
385 390 395 400

Phe Thr Leu Glu Thr Ser Gly Trp Asn Gly Thr Asp Val Ser Leu Glu  
405 410 415

Gly Lys Phe Gln Met Glu Asp Leu Val Tyr Asn Pro Glu Gln Val Pro  
420 425 430

Arg Tyr Tyr Gln Asn Ala Tyr Leu His Leu Arg Pro Phe Tyr Ser Thr

## HYS-31CIP

435

440

445

Thr Arg Ser Phe Leu Gly Ile His Arg Leu Asn Gly Pro Leu Lys Cys  
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Gly Gln Pro Gln Glu Val Leu Val Asp Tyr Tyr Ile Asp Pro Ala Asp  
 465 470 475 480

Ala Ser Pro Asp Gln Glu Ile Ser Phe Ser Tyr Tyr Leu Ile Gly Lys  
 485 490 495

Gly Ser Leu Val Met Glu Gly Gln Lys His Leu Asn Ser Lys Lys Lys  
 500 505 510

Gly Leu Lys Ala Ser Phe Ser Leu Ser Leu Thr Phe Thr Ser Arg Leu  
 515 520 525

Ala Pro Asp Pro Ser Leu Val Ile Tyr Ala Ile Phe Pro Ser Gly Gly  
 530 535 540

Val Val Ala Asp Lys Ile Gln Phe Ser Val Gly Met Cys Phe Asp Asn  
 545 550 555 560

Gln Val Ser Leu Gly Phe Ser Pro Ser Gln Gln Leu Pro Gly Ala Glu  
 565 570 575

Val Glu Leu Gln Leu Gln Ala Ala Pro Gly Ser Leu Cys Ala Leu Arg  
 580 585 590

Ala Val Asp Glu Ser Val Leu Leu Leu Arg Pro Asp Arg Glu Leu Ser  
 595 600 605

Asn Arg Ser Val Tyr Gly Met Phe Pro Phe Trp Tyr Gly His Tyr Pro  
 610 615 620

Tyr Gln Val Ala Glu Tyr Asp Gln Cys Pro Val Ser Gly Pro Trp Asp  
 625 630 635 640

Phe Pro Gln Pro Leu Ile Asp Pro Met Pro Gln Gly His Ser Ser Gln  
 645 650 655

Arg Ser Ile Ile Trp Arg Pro Ser Phe Ser Glu Gly Thr Asp Leu Phe  
 660 665 670

Ser Phe Phe Arg Asp Val Gly Leu Lys Ile Leu Ser Asn Ala Lys Ile  
 675 680 685

## HYS-31CIP

Lys Lys Pro Val Asp Cys Ser His Arg Ser Pro Glu Tyr Ser Thr Ala  
690 695 700

Met Gly Gly Gly Gly His Pro Glu Ala Phe Glu Ser Ser Thr Pro Leu  
705 710 715 720

His Gln Ala Glu Asp Ser Gln Val Arg Gln Tyr Phe Pro Glu Thr Trp  
725 730 735

Leu Trp Asp Leu Phe Pro Ile Gly Asn Ser Gly Lys Glu Ala Val His  
740 745 750

Val Thr Val Pro Asp Ala Ile Thr Glu Trp Lys Ala Met Ser Phe Cys  
755 760 765

Thr Ser Gln Ser Arg Gly Phe Gly Leu Ser Pro Thr Val Gly Leu Thr  
770 775 780

Ala Phe Lys Pro Phe Phe Val Asp Leu Thr Leu Pro Tyr Ser Val Val  
785 790 795 800

Arg Gly Glu Ser Phe Arg Leu Thr Ala Thr Ile Phe Asn Tyr Leu Lys  
805 810 815

Asp Cys Ile Arg Val Gln Thr Asp Leu Ala Lys Ser His Glu Tyr Gln  
820 825 830

Leu Glu Ser Trp Ala Asp Ser Gln Thr Ser Ser Cys Leu Cys Ala Asp  
835 840 845

Asp Ala Lys Thr His His Trp Asn Ile Thr Ala Val Lys Leu Gly His  
850 855 860

Ile Asn Phe Thr Ile Ser Thr Lys Ile Leu Asp Ser Asn Glu Pro Cys  
865 870 875 880

Gly Gly Gln Lys Gly Phe Val Pro Gln Lys Gly Arg Ser Asp Thr Leu  
885 890 895

Ile Lys Pro Val Leu Val Lys Pro Glu Gly Val Leu Val Glu Lys Thr  
900 905 910

His Ser Ser Leu Leu Cys Pro Lys Gly Lys Val Ala Ser Glu Ser Val  
915 920 925

Ser Leu Glu Leu Pro Val Asp Ile Val Pro Asp Ser Thr Lys Ala Tyr  
930 935 940

## HYS-31CIP

Val Thr Val Leu Gly Lys Gln Leu Glu Ile Leu Asp Ser Glu Arg Lys  
 945 950 955 960

Arg Arg Met Glu Ala Ala Lys Val Trp Arg Asp Ile Met Gly Thr Ala  
 965 970 975

Leu Gln Asn Leu Asp Gly Leu Val Gln Met Pro Ser Gly Cys Gly Glu  
 980 985 990

Gln Asn Met Val Leu Phe Ala Pro Ile Ile Tyr Val Leu Gln Tyr Leu  
 995 1000 1005

Glu Lys Ala Gly Leu Leu Thr Glu Glu Ile Arg Ser Arg Ala Val  
 1010 1015 1020

Gly Phe Leu Glu Ile Gly Tyr Gln Lys Glu Leu Met Tyr Lys His  
 1025 1030 1035

Ser Asn Gly Ser Tyr Ser Ala Phe Gly Glu Arg Asp Gly Asn Gly  
 1040 1045 1050

Asn Thr Trp Leu Thr Ala Phe Val Thr Lys Cys Phe Gly Gln Ala  
 1055 1060 1065

Gln Lys Phe Ile Phe Ile Asp Pro Lys Asn Ile Gln Asp Ala Leu  
 1070 1075 1080

Lys Trp Met Ala Gly Asn Gln Leu Pro Ser Gly Cys Tyr Ala Asn  
 1085 1090 1095

Val Gly Asn Leu Leu His Thr Ala Met Lys Gly Gly Val Asp Asp  
 1100 1105 1110

Glu Val Ser Leu Thr Ala Tyr Val Thr Ala Ala Leu Leu Glu Met  
 1115 1120 1125

Gly Lys Asp Val Asp Asp Pro Met Val Ser Gln Gly Leu Arg Cys  
 1130 1135 1140

Leu Lys Asn Ser Ala Thr Ser Thr Thr Asn Leu Tyr Thr Gln Ala  
 1145 1150 1155

Leu Leu Ala Tyr Ile Phe Ser Leu Ala Gly Glu Met Asp Ile Arg  
 1160 1165 1170

Asn Ile Leu Leu Lys Gln Leu Asp Gln Gln Ala Ile Ile Ser Gly  
 1175 1180 1185

## HYS-31CIP

Glu	Ser	Ile	Tyr	Trp	Ser	Gln	Lys	Pro	Thr	Pro	Ser	Ser	Asn	Ala
1190						1195					1200			
Ser	Pro	Trp	Ser	Glu	Pro	Ala	Ala	Val	Asp	Val	Glu	Leu	Thr	Ala
1205						1210					1215			
Tyr	Ala	Leu	Leu	Ala	Gln	Leu	Thr	Lys	Pro	Ser	Leu	Thr	Gln	Lys
1220						1225					1230			
Glu	Ile	Ala	Lys	Ala	Thr	Ser	Ile	Val	Ala	Trp	Leu	Ala	Lys	Gln
1235						1240					1245			
His	Asn	Ala	Tyr	Gly	Gly	Phe	Ser	Ser	Thr	Gln	Asp	Thr	Val	Val
1250						1255					1260			
Ala	Leu	Gln	Ala	Leu	Ala	Lys	Tyr	Ala	Thr	Thr	Ala	Tyr	Met	Pro
1265						1270					1275			
Ser	Glu	Glu	Ile	Asn	Leu	Val	Val	Lys	Ser	Thr	Glu	Asn	Phe	Gln
1280						1285					1290			
Arg	Thr	Phe	Asn	Ile	Gln	Ser	Val	Asn	Arg	Leu	Val	Phe	Gln	Gln
1295						1300					1305			
Asp	Thr	Leu	Pro	Asn	Val	Pro	Gly	Met	Tyr	Thr	Leu	Glu	Ala	Ser
1310						1315					1320			
Gly	Gln	Gly	Cys	Val	Tyr	Val	Gln	Thr	Val	Leu	Arg	Tyr	Asn	Ile
1325						1330					1335			
Leu	Pro	Pro	Thr	Asn	Met	Lys	Thr	Phe	Ser	Leu	Ser	Val	Glu	Ile
1340						1345					1350			
Gly	Lys	Ala	Arg	Cys	Glu	Gln	Pro	Thr	Ser	Pro	Arg	Ser	Leu	Thr
1355						1360					1365			
Leu	Thr	Ile	His	Thr	Ser	Tyr	Val	Gly	Ser	Arg	Ser	Ser	Ser	Asn
1370						1375					1380			
Met	Ala	Ile	Val	Glu	Val	Lys	Met	Leu	Ser	Gly	Phe	Ser	Pro	Met
1385						1390					1395			
Glu	Gly	Thr	Asn	Gln	Leu	Leu	Leu	Gln	Gln	Pro	Leu	Val	Lys	Lys
1400						1405					1410			
Val	Glu	Phe	Gly	Thr	Asp	Thr	Leu	Asn	Ile	Tyr	Leu	Asp	Glu	Leu

## HYS-31CIP

1415

1420

1425

Ile Lys Asn Thr Gln Thr Tyr Thr Phe Thr Ile Ser Gln Ser Val  
 1430 1435 1440

Leu Val Thr Asn Leu Lys Pro Ala Thr Ile Lys Val Tyr Asp Tyr  
 1445 1450 1455

Tyr Leu Pro Gly Ser Phe Lys Leu Ser Gln Tyr Thr Ile Val Trp  
 1460 1465 1470

Ser Met Asn Asn Asp Ser Ile Val Asp Ser Val Ala Arg His Pro  
 1475 1480 1485

Glu Pro Pro Pro Phe Lys Thr Glu Ala Phe Ile Pro Ser Leu Pro  
 1490 1495 1500

Gly Ser Val Asn Asn  
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## HYS-31CIP

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 <211> 31  
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## HYS-31CIP

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&lt;400&gt; 6

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Ser Thr Gln Asp Thr Val Val Ala Leu Gln Ala Leu Ala Lys Tyr  
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&lt;210&gt; 7

&lt;211&gt; 30

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 7

Ala Phe Lys Pro Phe Phe Val Asp Leu Thr Leu Pro Tyr Ser Val Val  
 1 5 10 15

Arg Gly Glu Ser Phe Arg Leu Thr Ala Thr Ile Phe Asn Tyr  
 20 25 30

&lt;210&gt; 8

&lt;211&gt; 32

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 8

Leu Val Gln Met Pro Ser Gly Cys Gly Glu Gln Asn Met Val Leu Phe  
 1 5 10 15

Ala Pro Ile Ile Tyr Val Leu Gln Tyr Leu Glu Lys Ala Gly Leu Leu  
 20 25 30

&lt;210&gt; 9

&lt;211&gt; 29

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 9

Thr Phe Val Gln Thr Asp Lys Pro Leu Tyr Thr Pro Gly Gln Gln Val  
 1 5 10 15

Tyr Phe Arg Ile Val Thr Met Asp Ser Asn Phe Val Pro  
 20 25

&lt;210&gt; 10

&lt;211&gt; 33

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 10

Phe Thr Ile Ser Gln Ser Val Leu Val Thr Asn Leu Lys Pro Ala Thr  
 1 5 10 15

Ile Lys Val Tyr Asp Tyr Tyr Leu Pro Gly Ser Phe Lys Leu Ser Gln  
 20 25 30

Tyr

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<210> 11  
 <211> 24  
 <212> PRT  
 <213> Homo sapiens

<400> 11

Ser Asn Met Ala Ile Val Glu Val Lys Met Leu Ser Gly Phe Ser Pro  
 1 5 10 15

Met Glu Gly Thr Asn Gln Leu Leu  
 20

<210> 12  
 <211> 27  
 <212> PRT  
 <213> Homo sapiens

<400> 12

Phe Val Asp Leu Thr Leu Pro Tyr Ser Val Val Arg Gly Glu Ser Phe  
 1 5 10 15

Arg Leu Thr Ala Thr Ile Phe Asn Tyr Leu Lys  
 20 25

<210> 13  
 <211> 21  
 <212> PRT  
 <213> Homo sapiens

<400> 13

Val Pro Asp Ala Ile Thr Glu Trp Lys Ala Met Ser Phe Cys Thr Ser  
 1 5 10 15

Gln Ser Arg Gly Phe  
 20

<210> 14  
 <211> 13  
 <212> PRT  
 <213> Homo sapiens

<400> 14

Phe Ser Val Glu Glu Tyr Val Leu Pro Lys Phe Lys Val  
 1 5 10

<210> 15  
 <211> 27  
 <212> PRT  
 <213> Homo sapiens

<400> 15

Trp Met Ala Gly Asn Gln Leu Pro Ser Gly Cys Tyr Ala Asn Val Gly  
 1 5 10 15

Asn Leu Leu His Thr Ala Met Lys Gly Gly Val  
 20 25

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<210> 16  
 <211> 10  
 <212> PRT  
 <213> Homo sapiens

<400> 16

Arg Gln Tyr Phe Pro Glu Thr Trp Leu Trp  
 1 5 10

<210> 17  
 <211> 12  
 <212> PRT  
 <213> Homo sapiens

<400> 17

Asn Thr Trp Leu Thr Ala Phe Val Thr Lys Cys Phe  
 1 5 10

<210> 18  
 <211> 17  
 <212> PRT  
 <213> Homo sapiens

<400> 18

Phe Leu Val Lys Ile Cys Cys Arg Tyr Thr Tyr Gly Lys Pro Met Leu  
 1 5 10 15

Gly

<210> 19  
 <211> 17  
 <212> PRT  
 <213> Homo sapiens

<400> 19

Met Trp Ala Gln Leu Leu Gly Met Leu Ala Leu Ser Pro Ala Ile  
 1 5 10 15

Ala

<210> 20  
 <211> 179  
 <212> PRT  
 <213> Homo sapiens

<400> 20

Ser Ser Thr Ile Arg Val Ser Gly Val Cys Tyr Asn Ile Ser Phe Glu  
 1 5 10 15

Glu Asn Lys Lys Val Leu Ile Gln Arg Gln Gly Asn Gly Thr Phe Val  
 20 25 30

Gln Thr Asp Lys Pro Leu Tyr Thr Pro Gly Gln Gln Val Tyr Phe Arg  
 35 40 45

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Ile Val Thr Met Asp Ser Asn Phe Val Pro Val Asn Asp Lys Tyr Ser  
 50 55 60

Met Val Glu Leu Gln Asp Pro Asn Ser Asn Arg Ile Ala Gln Trp Leu  
 65 70 75 80

Glu Val Val Pro Glu Gln Gly Ile Val Asp Leu Ser Phe Gln Leu Ala  
 85 90 95

Pro Glu Ala Met Leu Gly Thr Tyr Thr Val Ala Val Ala Glu Gly Lys  
 100 105 110

Thr Phe Gly Thr Phe Ser Val Glu Glu Tyr Val Leu Pro Lys Phe Lys  
 115 120 125

Val Glu Val Val Glu Pro Lys Glu Leu Ser Thr Val Gln Glu Ser Phe  
 130 135 140

Leu Val Lys Ile Cys Cys Arg Tyr Thr Tyr Gly Lys Pro Met Leu Gly  
 145 150 155 160

Ala Val Gln Val Ser Val Cys Gln Lys Ala Asn Thr Tyr Trp Tyr Arg  
 165 170 175

Glu Val Glu

<210> 21  
 <211> 300  
 <212> PRT  
 <213> Homo sapiens

<400> 21

Leu Gln Asn Leu Asp Gly Leu Val Gln Met Pro Ser Gly Cys Gly Glu  
 1 5 10 15

Gln Asn Met Val Leu Phe Ala Pro Ile Ile Tyr Val Leu Gln Tyr Leu  
 20 25 30

Glu Lys Ala Gly Leu Leu Thr Glu Glu Ile Arg Ser Arg Ala Val Gly  
 35 40 45

Phe Leu Glu Ile Gly Tyr Gln Lys Glu Leu Met Tyr Lys His Ser Asn  
 50 55 60

Gly Ser Tyr Ser Ala Phe Gly Glu Arg Asp Gly Asn Gly Asn Thr Trp  
 65 70 75 80

Leu Thr Ala Phe Val Thr Lys Cys Phe Gly Gln Ala Gln Lys Phe Ile  
 85 90 95

Phe Ile Asp Pro Lys Asn Ile Gln Asp Ala Leu Lys Trp Met Ala Gly  
 100 105 110

Asn Gln Leu Pro Ser Gly Cys Tyr Ala Asn Val Gly Asn Leu Leu His  
 115 120 125

Thr Ala Met Lys Gly Gly Val Asp Asp Glu Val Ser Leu Thr Ala Tyr  
 130 135 140

Val Thr Ala Ala Leu Leu Glu Met Gly Lys Asp Val Asp Asp Pro Met  
 145 150 155 160

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Val Ser Gln Gly Leu Arg Cys Leu Lys Asn Ser Ala Thr Ser Thr Thr  
 165 170 175  
 Asn Leu Tyr Thr Gln Ala Leu Leu Ala Tyr Ile Phe Ser Leu Ala Gly  
 180 185 190  
 Glu Met Asp Ile Arg Asn Ile Leu Leu Lys Gln Leu Asp Gln Gln Ala  
 195 200 205  
 Ile Ile Ser Gly Glu Ser Ile Tyr Trp Ser Gln Lys Pro Thr Pro Ser  
 210 215 220  
 Ser Asn Ala Ser Pro Trp Ser Glu Pro Ala Ala Val Asp Val Glu Leu  
 225 230 235 240  
 Thr Ala Tyr Ala Leu Leu Ala Gln Leu Thr Lys Pro Ser Leu Thr Gln  
 245 250 255  
 Lys Glu Ile Ala Lys Ala Thr Ser Ile Val Ala Trp Leu Ala Lys Gln  
 260 265 270  
 His Asn Ala Tyr Gly Gly Phe Ser Ser Thr Gln Asp Thr Val Val Ala  
 275 280 285  
 Leu Gln Ala Leu Ala Lys Tyr Ala Thr Thr Ala Tyr  
 290 295 300

<210> 22  
 <211> 137  
 <212> PRT  
 <213> Homo sapiens

<400> 22

Asn Met Lys Thr Phe Ser Leu Ser Val Glu Ile Gly Lys Ala Arg Cys  
 1 5 10 15  
 Glu Gln Pro Thr Ser Pro Arg Ser Leu Thr Leu Thr Ile His Thr Ser  
 20 25 30  
 Tyr Val Gly Ser Arg Ser Ser Ser Asn Met Ala Ile Val Glu Val Lys  
 35 40 45  
 Met Leu Ser Gly Phe Ser Pro Met Glu Gly Thr Asn Gln Leu Leu Leu  
 50 55 60  
 Gln Gln Pro Leu Val Lys Lys Val Glu Phe Gly Thr Asp Thr Leu Asn  
 65 70 75 80  
 Ile Tyr Leu Asp Glu Leu Ile Lys Asn Thr Gln Thr Tyr Thr Phe Thr  
 85 90 95  
 Ile Ser Gln Ser Val Leu Val Thr Asn Leu Lys Pro Ala Thr Ile Lys  
 100 105 110  
 Val Tyr Asp Tyr Tyr Leu Pro Gly Ser Phe Lys Leu Ser Gln Tyr Thr  
 115 120 125  
 Ile Val Trp Ser Met Asn Asn Asp Ser  
 130 135

<210> 23

## HYS-31CIP

<211> 1450  
 <212> PRT  
 <213> Homo sapiens

<400> 23

Leu	Leu	Leu	Val	Leu	Leu	Pro	Thr	Asp	Ala	Ser	Val	Ser	Gly	Lys	Pro
1				5					10					15	
Gln	Tyr	Met	Val	Leu	Val	Pro	Ser	Leu	Leu	His	Thr	Glu	Thr	Thr	Glu
			20					25					30		
Lys	Gly	Cys	Val	Leu	Leu	Ser	Tyr	Leu	Asn	Glu	Thr	Val	Thr	Val	Ser
		35					40					45			
Ala	Ser	Leu	Glu	Ser	Val	Arg	Gly	Asn	Arg	Ser	Leu	Phe	Thr	Asp	Leu
	50					55					60				
Glu	Ala	Glu	Asn	Asp	Val	Leu	His	Cys	Val	Ala	Phe	Ala	Val	Pro	Lys
65				70					75					80	
Ser	Ser	Ser	Asn	Glu	Glu	Val	Met	Phe	Leu	Thr	Val	Gln	Val	Lys	Gly
			85						90					95	
Pro	Thr	Gln	Glu	Phe	Lys	Lys	Arg	Thr	Thr	Val	Met	Val	Lys	Asn	Glu
		100						105					110		
Asp	Ser	Leu	Val	Phe	Val	Gln	Thr	Asp	Lys	Ser	Ile	Tyr	Lys	Pro	Gly
		115					120					125			
Gln	Thr	Val	Lys	Phe	Arg	Val	Val	Ser	Met	Asp	Glu	Asn	Phe	His	Pro
	130					135					140				
Leu	Asn	Glu	Leu	Ile	Pro	Leu	Val	Tyr	Ile	Gln	Asp	Pro	Lys	Gly	Asn
145					150					155					160
Arg	Ile	Ala	Gln	Trp	Gln	Ser	Phe	Gln	Leu	Glu	Gly	Gly	Leu	Lys	Gln
			165						170					175	
Phe	Ser	Phe	Pro	Leu	Ser	Ser	Glu	Pro	Phe	Gln	Gly	Ser	Tyr	Lys	Val
			180					185					190		
Val	Val	Gln	Lys	Lys	Ser	Gly	Gly	Arg	Thr	Glu	His	Pro	Phe	Thr	Val
		195					200					205			
Glu	Glu	Phe	Val	Leu	Pro	Lys	Phe	Glu	Val	Gln	Val	Thr	Val	Pro	Lys
	210					215					220				
Ile	Ile	Thr	Ile	Leu	Glu	Glu	Glu	Met	Asn	Val	Ser	Val	Cys	Gly	Leu
225					230					235					240
Tyr	Thr	Tyr	Gly	Lys	Pro	Val	Pro	Gly	His	Val	Thr	Val	Ser	Ile	Cys
				245					250					255	
Arg	Lys	Tyr	Ser	Asp	Ala	Ser	Asp	Cys	His	Gly	Glu	Asp	Ser	Gln	Ala
			260					265					270		
Phe	Cys	Glu	Lys	Phe	Ser	Gly	Gln	Leu	Asn	Ser	His	Gly	Cys	Phe	Tyr
		275					280					285			
Gln	Gln	Val	Lys	Thr	Lys	Val	Phe	Gln	Leu	Lys	Arg	Lys	Glu	Tyr	Glu
	290					295					300				

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Met	Lys	Leu	His	Thr	Glu	Ala	Gln	Ile	Gln	Glu	Glu	Gly	Thr	Val	Val	305	310	315	320
Glu	Leu	Thr	Gly	Arg	Gln	Ser	Ser	Glu	Ile	Thr	Arg	Thr	Ile	Thr	Lys	325	330	335	
Leu	Ser	Phe	Val	Lys	Val	Asp	Ser	His	Phe	Arg	Gln	Gly	Ile	Pro	Phe	340	345	350	
Phe	Gly	Gln	Val	Arg	Leu	Val	Asp	Gly	Lys	Gly	Val	Pro	Ile	Pro	Asn	355	360	365	
Lys	Val	Ile	Phe	Ile	Arg	Gly	Asn	Glu	Ala	Asn	Tyr	Tyr	Ser	Asn	Ala	370	375	380	
Thr	Thr	Asp	Glu	His	Gly	Leu	Val	Gln	Phe	Ser	Ile	Asn	Thr	Thr	Asn	385	390	395	400
Val	Met	Gly	Thr	Ser	Leu	Thr	Val	Arg	Val	Asn	Tyr	Lys	Asp	Arg	Ser	405	410	415	
Pro	Cys	Tyr	Gly	Tyr	Gln	Trp	Val	Ser	Glu	Glu	His	Glu	Glu	Ala	His	420	425	430	
His	Thr	Ala	Tyr	Leu	Val	Phe	Ser	Pro	Ser	Lys	Ser	Phe	Val	His	Leu	435	440	445	
Glu	Pro	Met	Ser	His	Glu	Leu	Pro	Cys	Gly	His	Thr	Gln	Thr	Val	Gln	450	455	460	
Ala	His	Tyr	Ile	Leu	Asn	Gly	Gly	Thr	Leu	Leu	Gly	Leu	Lys	Lys	Leu	465	470	475	480
Ser	Phe	Tyr	Tyr	Leu	Ile	Met	Ala	Lys	Gly	Gly	Ile	Val	Arg	Thr	Gly	485	490	495	
Thr	His	Gly	Leu	Leu	Val	Lys	Gln	Glu	Asp	Met	Lys	Gly	His	Phe	Ser	500	505	510	
Ile	Ser	Ile	Pro	Val	Lys	Ser	Asp	Ile	Ala	Pro	Val	Ala	Arg	Leu	Leu	515	520	525	
Ile	Tyr	Ala	Val	Leu	Pro	Thr	Gly	Asp	Val	Ile	Gly	Asp	Ser	Ala	Lys	530	535	540	
Tyr	Asp	Val	Glu	Asn	Cys	Leu	Ala	Asn	Lys	Val	Asp	Leu	Ser	Phe	Ser	545	550	555	560
Pro	Ser	Gln	Ser	Leu	Pro	Ala	Ser	His	Ala	His	Leu	Arg	Val	Thr	Ala	565	570	575	
Ala	Pro	Gln	Ser	Val	Cys	Ala	Leu	Arg	Ala	Val	Asp	Gln	Ser	Val	Leu	580	585	590	
Leu	Met	Lys	Pro	Asp	Ala	Glu	Leu	Ser	Ala	Ser	Ser	Val	Tyr	Asn	Leu	595	600	605	
Leu	Pro	Glu	Lys	Asp	Leu	Thr	Gly	Phe	Pro	Gly	Pro	Leu	Asn	Asp	Gln	610	615	620	
Asp	Asp	Glu	Asp	Cys	Ile	Asn	Arg	His	Asn	Val	Tyr	Ile	Asn	Gly	Ile	625	630	635	640



## HYS-31CIP

Thr	Tyr	Thr	Pro	Val	Ser	Ser	Thr	Asn	Glu	Lys	Asp	Met	Tyr	Ser	Phe
				645					650					655	
Leu	Glu	Asp	Met	Gly	Leu	Lys	Ala	Phe	Thr	Asn	Ser	Lys	Ile	Arg	Lys
			660					665					670		
Pro	Lys	Met	Cys	Pro	Gln	Leu	Gln	Gln	Tyr	Glu	Met	His	Gly	Pro	Glu
		675					680					685			
Gly	Leu	Arg	Val	Gly	Phe	Tyr	Glu	Ser	Asp	Val	Met	Gly	Arg	Gly	His
	690					695					700				
Ala	Arg	Leu	Val	His	Val	Glu	Glu	Pro	His	Thr	Glu	Thr	Val	Arg	Lys
705					710					715					720
Tyr	Phe	Pro	Glu	Thr	Trp	Ile	Trp	Asp	Leu	Val	Val	Val	Asn	Ser	Ala
				725					730					735	
Gly	Val	Ala	Glu	Val	Gly	Val	Thr	Val	Pro	Asp	Thr	Ile	Thr	Glu	Trp
			740					745					750		
Lys	Ala	Gly	Ala	Phe	Cys	Leu	Ser	Glu	Asp	Ala	Gly	Leu	Gly	Ile	Ser
		755					760					765			
Ser	Thr	Ala	Ser	Leu	Arg	Ala	Phe	Gln	Pro	Phe	Phe	Val	Glu	Leu	Thr
	770					775					780				
Met	Pro	Tyr	Ser	Val	Ile	Arg	Gly	Glu	Ala	Phe	Thr	Leu	Lys	Ala	Thr
785					790					795					800
Val	Leu	Asn	Tyr	Leu	Pro	Lys	Cys	Ile	Arg	Val	Ser	Val	Gln	Leu	Glu
				805					810					815	
Ala	Ser	Pro	Ala	Phe	Leu	Ala	Val	Pro	Val	Glu	Lys	Glu	Gln	Ala	Pro
			820					825					830		
His	Cys	Ile	Cys	Ala	Asn	Gly	Arg	Gln	Thr	Val	Ser	Trp	Ala	Val	Thr
		835					840					845			
Pro	Lys	Ser	Leu	Gly	Asn	Val	Asn	Phe	Thr	Val	Ser	Ala	Glu	Ala	Leu
	850					855					860				
Glu	Ser	Gln	Glu	Leu	Cys	Gly	Thr	Glu	Val	Pro	Ser	Val	Pro	Glu	His
865					870					875					880
Gly	Arg	Lys	Asp	Thr	Val	Ile	Lys	Pro	Leu	Leu	Val	Glu	Pro	Glu	Gly
				885					890					895	
Leu	Glu	Lys	Glu	Thr	Thr	Phe	Asn	Ser	Leu	Leu	Cys	Pro	Ser	Gly	Gly
			900					905					910		
Glu	Val	Ser	Glu	Glu	Leu	Ser	Leu	Lys	Leu	Pro	Pro	Asn	Val	Val	Glu
		915					920					925			
Glu	Ser	Ala	Arg	Ala	Ser	Val	Ser	Val	Leu	Gly	Asp	Ile	Leu	Gly	Ser
	930					935					940				
Ala	Met	Gln	Asn	Thr	Gln	Asn	Leu	Leu	Gln	Met	Pro	Tyr	Gly	Cys	Gly
945					950					955					960
Glu	Gln	Asn	Met	Val	Leu	Phe	Ala	Pro	Asn	Ile	Tyr	Val	Leu	Asp	Tyr
				965					970					975	

## HYS-31CIP

Leu	Asn	Glu	Thr	Gln	Gln	Leu	Thr	Pro	Glu	Val	Lys	Ser	Lys	Ala	Ile
								985							990
Gly	Tyr	Leu	Asn	Thr	Gly	Tyr	Gln	Arg	Gln	Leu	Asn	Tyr	Lys	His	Tyr
		995					1000						1005		
Asp	Gly	Ser	Tyr	Ser	Thr	Phe	Gly	Glu	Arg	Tyr	Gly	Arg	Asn	Gln	
	1010					1015					1020				
Gly	Asn	Thr	Trp	Leu	Thr	Ala	Phe	Val	Leu	Lys	Thr	Phe	Ala	Gln	
	1025					1030					1035				
Ala	Arg	Ala	Tyr	Ile	Phe	Ile	Asp	Glu	Ala	His	Ile	Thr	Gln	Ala	
	1040					1045					1050				
Leu	Ile	Trp	Leu	Ser	Gln	Arg	Gln	Lys	Asp	Asn	Gly	Cys	Phe	Arg	
	1055					1060					1065				
Ser	Ser	Gly	Ser	Leu	Leu	Asn	Asn	Ala	Ile	Lys	Gly	Gly	Val	Glu	
	1070					1075					1080				
Asp	Glu	Val	Thr	Leu	Ser	Ala	Tyr	Ile	Thr	Ile	Ala	Leu	Leu	Glu	
	1085					1090					1095				
Ile	Pro	Leu	Thr	Val	Thr	His	Pro	Val	Val	Arg	Asn	Ala	Leu	Phe	
	1100					1105					1110				
Cys	Leu	Glu	Ser	Ala	Trp	Lys	Thr	Ala	Gln	Glu	Gly	Asp	His	Gly	
	1115					1120					1125				
Ser	His	Val	Tyr	Thr	Lys	Ala	Leu	Leu	Ala	Tyr	Ala	Phe	Ala	Leu	
	1130					1135					1140				
Ala	Gly	Asn	Gln	Asp	Lys	Arg	Lys	Glu	Val	Leu	Lys	Ser	Leu	Asn	
	1145					1150					1155				
Glu	Glu	Ala	Val	Lys	Lys	Asp	Asn	Ser	Val	His	Trp	Glu	Arg	Pro	
	1160					1165					1170				
Gln	Lys	Pro	Lys	Ala	Pro	Val	Gly	His	Phe	Tyr	Glu	Pro	Gln	Ala	
	1175					1180					1185				
Pro	Ser	Ala	Glu	Val	Glu	Met	Thr	Ser	Tyr	Val	Leu	Leu	Ala	Tyr	
	1190					1195					1200				
Leu	Thr	Ala	Gln	Pro	Ala	Pro	Thr	Ser	Glu	Asp	Leu	Thr	Ser	Ala	
	1205					1210					1215				
Thr	Asn	Ile	Val	Lys	Trp	Ile	Thr	Lys	Gln	Gln	Asn	Ala	Gln	Gly	
	1220					1225					1230				
Gly	Phe	Ser	Ser	Thr	Gln	Asp	Thr	Val	Val	Ala	Leu	His	Ala	Leu	
	1235					1240					1245				
Ser	Lys	Tyr	Gly	Ala	Ala	Thr	Phe	Thr	Arg	Thr	Gly	Lys	Ala	Ala	
	1250					1255					1260				
Gln	Val	Thr	Ile	Gln	Ser	Ser	Gly	Thr	Phe	Ser	Ser	Lys	Phe	Gln	
	1265					1270					1275				
Val	Asp	Asn	Asn	Asn	Arg	Leu	Leu	Leu	Gln	Gln	Val	Ser	Leu	Pro	
	1280					1285					1290				

## HYS-31CIP

Glu Leu Pro Gly Glu Tyr Ser Met Lys Val Thr Gly Glu Gly Cys  
 1295 1300 1305  
 Val Tyr Leu Gln Thr Ser Leu Lys Tyr Asn Ile Leu Pro Glu Lys  
 1310 1315 1320  
 Glu Glu Phe Pro Phe Ala Leu Gly Val Gln Thr Leu Pro Gln Thr  
 1325 1330 1335  
 Cys Asp Glu Pro Lys Ala His Thr Ser Phe Gln Ile Ser Leu Ser  
 1340 1345 1350  
 Val Ser Tyr Thr Gly Ser Arg Ser Ala Ser Asn Met Ala Ile Val  
 1355 1360 1365  
 Asp Val Lys Met Val Ser Gly Phe Ile Pro Leu Lys Pro Thr Val  
 1370 1375 1380  
 Lys Met Leu Glu Arg Ser Asn His Val Ser Arg Thr Glu Val Ser  
 1385 1390 1395  
 Ser Asn His Val Leu Ile Tyr Leu Asp Lys Val Ser Asn Gln Thr  
 1400 1405 1410  
 Leu Ser Leu Phe Phe Thr Val Leu Gln Asp Val Pro Val Arg Asp  
 1415 1420 1425  
 Leu Lys Pro Ala Ile Val Lys Val Tyr Asp Tyr Tyr Glu Thr Asp  
 1430 1435 1440  
 Glu Phe Ala Ile Ala Glu Tyr  
 1445 1450

<210> 24  
 <211> 1451  
 <212> PRT  
 <213> Homo sapiens

<400> 24

Leu Leu Leu Leu Val Leu Val Pro Thr Asp Ala Ser Val Ser Gly Lys  
 1 5 10 15  
 Pro Gln Tyr Met Val Leu Val Pro Ser Leu Leu His Thr Glu Thr Thr  
 20 25 30  
 Glu Lys Gly Cys Val Leu Leu Ser Tyr Leu Asn Glu Thr Val Thr Val  
 35 40 45  
 Ser Ala Ser Leu Glu Ser Val Arg Gly Asn Arg Ser Leu Phe Thr Asp  
 50 55 60  
 Leu Glu Ala Glu Asn Asp Val Leu His Cys Val Ala Phe Ala Val Pro  
 65 70 75 80  
 Lys Ser Ser Ser Asn Glu Glu Val Met Phe Leu Thr Val Gln Val Lys  
 85 90 95  
 Gly Pro Thr Gln Glu Phe Lys Lys Arg Thr Thr Val Met Val Lys Asn  
 100 105 110  
 Glu Asp Ser Leu Val Phe Val Gln Thr Asp Lys Ser Ile Tyr Lys Pro  
 115 120 125

## HYS-31CIP

Gly	Gln	Thr	Val	Lys	Phe	Arg	Val	Val	Ser	Met	Asp	Glu	Asn	Phe	His
130						135					140				
Pro	Leu	Asn	Glu	Leu	Ile	Pro	Leu	Val	Tyr	Ile	Gln	Asp	Pro	Lys	Gly
145					150					155					160
Asn	Arg	Ile	Ala	Gln	Trp	Gln	Ser	Phe	Gln	Leu	Glu	Gly	Gly	Leu	Lys
				165					170					175	
Gln	Phe	Ser	Phe	Pro	Leu	Ser	Ser	Glu	Pro	Phe	Gln	Gly	Ser	Tyr	Lys
			180					185					190		
Val	Val	Val	Gln	Lys	Lys	Ser	Gly	Gly	Arg	Thr	Glu	His	Pro	Phe	Thr
		195					200					205			
Val	Glu	Glu	Phe	Val	Leu	Pro	Lys	Phe	Glu	Val	Gln	Val	Thr	Val	Pro
	210					215					220				
Lys	Ile	Ile	Thr	Ile	Leu	Glu	Glu	Glu	Met	Asn	Val	Ser	Val	Cys	Gly
225					230					235					240
Leu	Tyr	Thr	Tyr	Gly	Lys	Pro	Val	Pro	Gly	His	Val	Thr	Val	Ser	Ile
				245					250					255	
Cys	Arg	Lys	Tyr	Ser	Asp	Ala	Ser	Asp	Cys	His	Gly	Glu	Asp	Ser	Gln
			260					265					270		
Ala	Phe	Cys	Glu	Lys	Phe	Ser	Gly	Gln	Leu	Asn	Ser	His	Gly	Cys	Phe
		275					280					285			
Tyr	Gln	Gln	Val	Lys	Thr	Lys	Val	Phe	Gln	Leu	Lys	Arg	Lys	Glu	Tyr
	290					295					300				
Glu	Met	Lys	Leu	His	Thr	Glu	Ala	Gln	Ile	Gln	Glu	Glu	Gly	Thr	Val
305					310					315					320
Val	Glu	Leu	Thr	Gly	Arg	Gln	Ser	Ser	Glu	Ile	Thr	Arg	Thr	Ile	Thr
				325					330					335	
Lys	Leu	Ser	Phe	Val	Lys	Val	Asp	Ser	His	Phe	Arg	Gln	Gly	Ile	Pro
			340					345					350		
Phe	Phe	Gly	Gln	Val	Arg	Leu	Val	Asp	Gly	Lys	Gly	Val	Pro	Ile	Pro
		355					360					365			
Asn	Lys	Val	Ile	Phe	Ile	Arg	Gly	Asn	Glu	Ala	Asn	Tyr	Tyr	Ser	Asn
	370					375					380				
Ala	Thr	Thr	Asp	Glu	His	Gly	Leu	Val	Gln	Phe	Ser	Ile	Asn	Thr	Thr
385					390					395					400
Asn	Val	Met	Gly	Thr	Ser	Leu	Thr	Val	Arg	Val	Asn	Tyr	Lys	Asp	Arg
				405					410					415	
Ser	Pro	Cys	Tyr	Gly	Tyr	Gln	Trp	Val	Ser	Glu	Glu	His	Glu	Glu	Ala
			420					425					430		
His	His	Thr	Ala	Tyr	Leu	Val	Phe	Ser	Pro	Ser	Lys	Ser	Phe	Val	His
		435					440					445			
Leu	Glu	Pro	Met	Ser	His	Glu	Leu	Pro	Cys	Gly	His	Thr	Gln	Thr	Val
	450					455					460				

## HYS-31CIP

Gln Ala His Tyr Ile Leu Asn Gly Gly Thr Leu Leu Gly Leu Lys Lys  
 465 470 475 480  
 Leu Ser Phe Tyr Tyr Leu Ile Met Ala Lys Gly Gly Ile Val Arg Thr  
 485 490 495  
 Gly Thr His Gly Leu Leu Val Lys Gln Glu Asp Met Lys Gly His Phe  
 500 505 510  
 Ser Ile Ser Ile Pro Val Lys Ser Asp Ile Ala Pro Val Ala Arg Leu  
 515 520 525  
 Leu Ile Tyr Ala Val Leu Pro Thr Gly Asp Val Ile Gly Asp Ser Ala  
 530 535 540  
 Lys Tyr Asp Val Glu Asn Cys Leu Ala Asn Lys Val Asp Leu Ser Phe  
 545 550 555 560  
 Ser Pro Ser Gln Ser Leu Pro Ala Ser His Ala His Leu Arg Val Thr  
 565 570 575  
 Ala Ala Pro Gln Ser Val Cys Ala Leu Arg Ala Val Asp Gln Ser Val  
 580 585 590  
 Leu Leu Met Lys Pro Asp Ala Glu Leu Ser Ala Ser Ser Val Tyr Asn  
 595 600 605  
 Leu Leu Pro Glu Lys Asp Leu Thr Gly Phe Pro Gly Pro Leu Asn Asp  
 610 615 620  
 Gln Asp Asp Glu Asp Cys Ile Asn Arg His Asn Val Tyr Ile Asn Gly  
 625 630 635 640  
 Ile Thr Tyr Thr Pro Val Ser Ser Thr Asn Glu Lys Asp Met Tyr Ser  
 645 650 655  
 Phe Leu Glu Asp Met Gly Leu Lys Ala Phe Thr Asn Ser Lys Ile Arg  
 660 665 670  
 Lys Pro Lys Met Cys Pro Gln Leu Gln Gln Tyr Glu Met His Gly Pro  
 675 680 685  
 Glu Gly Leu Arg Val Gly Phe Tyr Glu Ser Asp Val Met Gly Arg Gly  
 690 695 700  
 His Ala Arg Leu Val His Val Glu Glu Pro His Thr Glu Thr Val Arg  
 705 710 715 720  
 Lys Tyr Phe Ala Glu Thr Trp Ile Trp Asp Leu Val Val Val Asn Ser  
 725 730 735  
 Ala Gly Val Ala Glu Val Gly Val Thr Val Pro Asp Thr Ile Thr Glu  
 740 745 750  
 Trp Lys Ala Gly Ala Phe Cys Leu Ser Glu Asp Ala Gly Leu Gly Ile  
 755 760 765  
 Ser Ser Thr Ala Ser Leu Arg Ala Phe Gln Pro Phe Phe Val Glu Leu  
 770 775 780  
 Thr Met Pro Tyr Ser Val Ile Arg Gly Glu Ala Phe Thr Leu Lys Ala  
 785 790 795 800

## HYS-31CIP

Thr Val Leu Asn Tyr Leu Pro Lys Cys Ile Arg Val Ser Val Gln Leu  
 805 810 815  
 Glu Ala Ser Pro Ala Phe Leu Ala Val Pro Val Glu Lys Glu Gln Ala  
 820 825 830  
 Pro His Cys Ile Cys Ala Asn Gly Arg Gln Thr Val Ser Trp Ala Val  
 835 840 845  
 Thr Pro Lys Ser Leu Gly Asn Val Asn Phe Thr Val Ser Ala Glu Ala  
 850 855 860  
 Leu Glu Ser Gln Glu Leu Cys Gly Thr Glu Val Pro Ser Val Pro Glu  
 865 870 875 880  
 His Gly Arg Lys Asp Thr Val Ile Lys Pro Leu Leu Val Glu Pro Glu  
 885 890 895  
 Gly Leu Glu Lys Glu Thr Thr Phe Asn Ser Leu Leu Cys Pro Ser Gly  
 900 905 910  
 Gly Glu Val Ser Glu Glu Leu Ser Leu Lys Leu Pro Pro Asn Val Val  
 915 920 925  
 Glu Glu Ser Ala Arg Ala Ser Val Ser Val Leu Gly Asp Ile Leu Gly  
 930 935 940  
 Ser Ala Met Gln Asn Thr Gln Asn Leu Leu Gln Met Pro Tyr Gly Cys  
 945 950 955 960  
 Gly Glu Gln Asn Met Val Leu Phe Ala Pro Asn Ile Tyr Val Leu Asp  
 965 970 975  
 Tyr Leu Asn Glu Thr Gln Gln Leu Thr Pro Glu Ile Lys Ser Lys Ala  
 980 985 990  
 Ile Gly Tyr Leu Asn Thr Gly Tyr Gln Arg Gln Leu Asn Tyr Lys His  
 995 1000 1005  
 Tyr Asp Gly Ser Tyr Ser Thr Phe Gly Glu Arg Tyr Gly Arg Asn  
 1010 1015 1020  
 Gln Gly Asn Thr Trp Leu Thr Ala Phe Val Leu Lys Thr Phe Ala  
 1025 1030 1035  
 Gln Ala Arg Ala Tyr Ile Phe Ile Asp Glu Ala His Ile Thr Gln  
 1040 1045 1050  
 Ala Leu Ile Trp Leu Ser Gln Arg Gln Lys Asp Asn Gly Cys Phe  
 1055 1060 1065  
 Arg Ser Ser Gly Ser Leu Leu Asn Asn Ala Ile Lys Gly Gly Val  
 1070 1075 1080  
 Glu Asp Glu Val Thr Leu Ser Ala Tyr Ile Thr Ile Ala Leu Leu  
 1085 1090 1095  
 Glu Ile Leu Leu Thr Val Thr His Pro Val Val Arg Asn Ala Leu  
 1100 1105 1110  
 Phe Cys Leu Glu Ser Ala Trp Lys Thr Ala Gln Glu Gly Asp His  
 1115 1120 1125

## HYS-31CIP

Gly 1130	Ser	His	Val	Tyr	Thr	Lys 1135	Ala	Leu	Leu	Ala	Tyr 1140	Ala	Phe	Ala
Leu 1145	Ala	Gly	Asn	Gln	Asp	Lys 1150	Arg	Lys	Glu	Val	Leu 1155	Lys	Ser	Leu
Asn 1160	Glu	Glu	Ala	Val	Lys	Lys 1165	Asp	Asn	Ser	Val	His 1170	Trp	Glu	Arg
Pro 1175	Gln	Lys	Pro	Lys	Ala	Pro 1180	Val	Gly	His	Phe	Tyr 1185	Glu	Pro	Gln
Ala 1190	Pro	Ser	Ala	Glu	Val	Glu 1195	Met	Thr	Ser	Tyr	Val 1200	Leu	Leu	Ala
Tyr 1205	Leu	Thr	Ala	Gln	Pro	Ala 1210	Pro	Thr	Ser	Glu	Asp 1215	Leu	Thr	Ser
Ala 1220	Thr	Asn	Ile	Val	Lys	Trp 1225	Ile	Thr	Lys	Gln	Gln 1230	Asn	Ala	Gln
Gly 1235	Gly	Phe	Ser	Ser	Thr	Gln 1240	His	Thr	Val	Val	Ala 1245	Leu	His	Ala
Leu 1250	Ser	Lys	Tyr	Gly	Ala	Ala 1255	Thr	Phe	Thr	Arg	Thr 1260	Gly	Lys	Ala
Ala 1265	Gln	Val	Thr	Ile	Gln	Ser 1270	Ser	Gly	Thr	Phe	Ser 1275	Ser	Lys	Phe
Gln 1280	Val	Asp	Asn	Asn	Asn	Arg 1285	Leu	Leu	Leu	Gln	Gln 1290	Val	Ser	Leu
Pro 1295	Glu	Leu	Pro	Gly	Glu	Tyr 1300	Ser	Met	Lys	Val	Thr 1305	Gly	Glu	Gly
Cys 1310	Val	Tyr	Leu	Gln	Thr	Ser 1315	Leu	Lys	Tyr	Asn	Ile 1320	Leu	Pro	Glu
Lys 1325	Glu	Glu	Phe	Pro	Phe	Ala 1330	Leu	Gly	Val	Gln	Thr 1335	Leu	Pro	Gln
Thr 1340	Cys	Asp	Glu	Pro	Lys	Ala 1345	His	Thr	Ser	Phe	Gln 1350	Ile	Ser	Leu
Ser 1355	Val	Ser	Tyr	Thr	Gly	Ser 1360	Arg	Ser	Ala	Ser	Asn 1365	Met	Ala	Ile
Val 1370	Asp	Val	Lys	Met	Val	Ser 1375	Gly	Phe	Ile	Pro	Leu 1380	Lys	Pro	Thr
Val 1385	Lys	Met	Leu	Glu	Arg	Ser 1390	Asn	His	Val	Ser	Arg 1395	Thr	Glu	Val
Ser 1400	Ser	Asn	His	Val	Leu	Ile 1405	Tyr	Leu	Asp	Lys	Val 1410	Ser	Asn	Gln
Thr 1415	Leu	Ser	Leu	Phe	Phe	Thr 1420	Val	Leu	Gln	Asp	Val 1425	Pro	Val	Arg
Asp 1430	Leu	Lys	Pro	Ala	Ile	Val 1435	Lys	Val	Tyr	Asp	Tyr 1440	Tyr	Glu	Thr

## HYS-31CIP

Asp Glu Phe Ala Ile Ala Glu Tyr  
1445 1450

<210> 25  
<211> 1491  
<212> PRT  
<213> hono sapiens

<400> 25

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Pro Ser Val Gln Lys Val Cys Leu Asp Leu Ser Pro Gly Tyr Ser Asp  
20 25 30  
Val Lys Phe Thr Val Thr Leu Glu Thr Lys Asp Lys Thr Gln Lys Leu  
35 40 45  
Leu Glu Tyr Ser Gly Leu Lys Lys Arg His Leu His Cys Ile Ser Phe  
50 55 60  
Leu Val Pro Pro Pro Ala Gly Gly Thr Glu Glu Val Ala Thr Ile Arg  
65 70 75 80  
Val Ser Gly Val Gly Asn Asn Ile Ser Phe Glu Glu Lys Lys Lys Val  
85 90 95  
Leu Ile Gln Arg Gln Gly Asn Gly Thr Phe Val Gln Thr Asp Lys Pro  
100 105 110  
Leu Tyr Thr Pro Gly Gln Gln Val Tyr Phe Arg Ile Val Thr Met Asp  
115 120 125  
Ser Asn Phe Val Pro Val Asn Asp Lys Tyr Ser Met Val Glu Leu Gln  
130 135 140  
Asp Pro Asn Ser Asn Arg Ile Ala Gln Trp Leu Glu Val Val Pro Glu  
145 150 155 160  
Gln Gly Ile Val Asp Leu Ser Phe Gln Leu Ala Pro Glu Ala Met Leu  
165 170 175  
Gly Thr Tyr Thr Val Ala Val Ala Glu Gly Lys Thr Phe Gly Thr Phe  
180 185 190  
Ser Val Glu Glu Tyr Val Leu Pro Lys Phe Lys Val Glu Val Val Glu  
195 200 205  
Pro Lys Glu Leu Ser Thr Val Gln Glu Ser Phe Leu Val Lys Ile Cys  
210 215 220  
Cys Arg Tyr Thr Tyr Gly Lys Pro Met Leu Gly Ala Val Gln Val Ser  
225 230 235 240  
Val Cys Gln Lys Ala Asn Thr Tyr Trp Tyr Arg Glu Val Glu Arg Glu  
245 250 255  
Gln Leu Pro Asp Lys Cys Arg Asn Leu Ser Gly Gln Thr Asp Lys Thr  
260 265 270  
Gly Cys Phe Ser Ala Pro Val Asp Met Ala Thr Phe Asp Leu Ile Gly



## HYS-31CIP

275					280					285					
Tyr	Ala	Tyr	Ser	His	Gln	Ile	Asn	Ile	Val	Ala	Thr	Val	Val	Glu	Glu
290					295					300					
Gly	Thr	Gly	Val	Glu	Ala	Asn	Ala	Thr	Gln	Asn	Ile	Tyr	Ile	Ser	Pro
305					310					315					320
Gln	Met	Gly	Ser	Met	Thr	Phe	Glu	Asp	Thr	Ser	Asn	Phe	Tyr	His	Pro
				325					330					335	
Asn	Phe	Pro	Phe	Ser	Gly	Lys	Ile	Arg	Val	Arg	Gly	His	Asp	Asp	Ser
			340					345					350		
Phe	Leu	Lys	Asn	His	Leu	Val	Phe	Leu	Val	Ile	Tyr	Gly	Thr	Asn	Gly
		355					360					365			
Thr	Phe	Asn	Gln	Thr	Leu	Val	Thr	Asp	Asn	Asn	Gly	Leu	Ala	Pro	Phe
	370						375					380			
Thr	Leu	Glu	Thr	Ser	Gly	Trp	Asn	Gly	Thr	Asp	Val	Ser	Leu	Glu	Gly
385												395			400
Lys	Phe	Gln	Met	Glu	Asp	Leu	Val	Tyr	Asn	Pro	Glu	Gln	Val	Pro	Arg
				405					410					415	
Tyr	Tyr	Gln	Asn	Ala	Tyr	Leu	His	Leu	Arg	Pro	Phe	Tyr	Ser	Thr	Thr
			420					425						430	
Arg	Ser	Phe	Leu	Gly	Ile	His	Arg	Leu	Asn	Gly	Pro	Leu	Lys	Cys	Gly
		435					440					445			
Gln	Pro	Gln	Glu	Val	Leu	Val	Asp	Tyr	Tyr	Ile	Asp	Pro	Ala	Asp	Ala
	450						455					460			
Ser	Pro	Asp	Gln	Glu	Ile	Ser	Phe	Ser	Tyr	Tyr	Leu	Ile	Gly	Lys	Gly
465							470					475			480
Ser	Leu	Val	Met	Glu	Gly	Gln	Lys	His	Leu	Asn	Ser	Lys	Lys	Lys	Gly
				485					490					495	
Leu	Lys	Ala	Ser	Phe	Ser	Leu	Ser	Leu	Thr	Phe	Thr	Ser	Arg	Leu	Ala
			500					505					510		
Pro	Asp	Pro	Ser	Leu	Val	Ile	Tyr	Ala	Ile	Phe	Pro	Ser	Gly	Gly	Val
		515					520					525			
Val	Ala	Asp	Lys	Ile	Gln	Phe	Ser	Val	Gly	Met	Cys	Phe	Asp	Asn	Gln
	530					535						540			
Val	Ser	Leu	Gly	Phe	Ser	Pro	Ser	Gln	Gln	Leu	Pro	Gly	Ala	Glu	Val
545						550					555				560
Glu	Leu	Gln	Leu	Gln	Ala	Ala	Pro	Gly	Ser	Leu	Cys	Ala	Leu	Arg	Ala
				565				570						575	
Val	Asp	Glu	Ser	Val	Leu	Leu	Leu	Arg	Pro	Asp	Arg	Glu	Leu	Ser	Asn
			580					585					590		
Arg	Ser	Val	Tyr	Gly	Met	Phe	Pro	Phe	Trp	Tyr	Gly	His	Tyr	Pro	Tyr
		595					600					605			
Gln	Val	Ala	Glu	Tyr	Asp	Gln	Cys	Pro	Val	Ser	Gly	Pro	Trp	Asp	Phe

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620

610

615

Pro	Gln	Pro	Leu	Ile	Asp	Pro	Met	Pro	Gln	Gly	His	Ser	Ser	Gln	Arg
625					630					635					640
Ser	Ile	Ile	Trp	Arg	Pro	Ser	Phe	Ser	Glu	Gly	Thr	Asp	Leu	Phe	Ser
				645					650					655	
Phe	Phe	Arg	Asp	Val	Gly	Leu	Lys	Ile	Leu	Ser	Asn	Ala	Lys	Ile	Lys
			660					665					670		
Lys	Pro	Val	Asp	Cys	Ser	His	Arg	Ser	Pro	Glu	Tyr	Ser	Thr	Ala	Met
		675					680					685			
Gly	Gly	Gly	Gly	His	Pro	Glu	Ala	Phe	Glu	Ser	Ser	Thr	Pro	Leu	His
	690					695					700				
Gln	Ala	Glu	Asp	Ser	Gln	Val	Arg	Gln	Tyr	Phe	Pro	Glu	Thr	Trp	Leu
705					710					715					720
Trp	Asp	Leu	Phe	Pro	Ile	Gly	Asn	Ser	Gly	Lys	Glu	Ala	Val	His	Val
				725					730					735	
Thr	Val	Pro	Asp	Ala	Ile	Thr	Glu	Trp	Lys	Ala	Met	Ser	Phe	Cys	Thr
			740					745					750		
Ser	Gln	Ser	Arg	Gly	Phe	Gly	Leu	Ser	Pro	Thr	Val	Gly	Leu	Thr	Ala
		755					760					765			
Phe	Lys	Pro	Phe	Phe	Val	Asp	Leu	Thr	Leu	Pro	Tyr	Ser	Val	Val	Arg
	770					775					780				
Gly	Glu	Ser	Phe	Arg	Leu	Thr	Ala	Thr	Ile	Phe	Asn	Tyr	Leu	Lys	Asp
785					790					795					800
Cys	Ile	Arg	Val	Gln	Thr	Asp	Leu	Ala	Lys	Ser	His	Glu	Tyr	Gln	Leu
				805					810					815	
Glu	Ser	Trp	Ala	Asp	Ser	Gln	Thr	Ser	Ser	Cys	Leu	Cys	Ala	Asp	Asp
			820					825					830		
Ala	Lys	Thr	His	His	Trp	Asn	Ile	Thr	Ala	Val	Lys	Leu	Gly	His	Ile
		835					840					845			
Asn	Phe	Thr	Ile	Ser	Thr	Lys	Ile	Leu	Asp	Ser	Asn	Glu	Pro	Cys	Gly
	850					855					860				
Gly	Gln	Lys	Gly	Phe	Val	Pro	Gln	Lys	Gly	Arg	Ser	Asp	Thr	Leu	Ile
865					870					875					880
Lys	Pro	Val	Leu	Val	Lys	Pro	Glu	Gly	Val	Leu	Val	Glu	Lys	Thr	His
				885					890					895	
Ser	Ser	Leu	Leu	Cys	Pro	Lys	Gly	Lys	Val	Ala	Ser	Glu	Ser	Val	Ser
			900					905					910		
Leu	Glu	Leu	Pro	Val	Asp	Ile	Val	Pro	Asp	Ser	Thr	Lys	Ala	Tyr	Val
		915					920					925			
Thr	Val	Leu	Gly	Lys	Gln	Leu	Glu	Ile	Leu	Asp	Ser	Glu	Arg	Lys	Arg
	930					935					940				
Arg	Met	Glu	Ala	Ala	Lys	Val	Trp	Arg	Asp	Ile	Met	Gly	Thr	Ala	Leu

## HYS-31CIP

945	950	955	960
Gln Asn Leu Asp	Gly Leu Val Gln Met	Pro Ser Gly Cys Gly Glu Gln	
	965	970	975
Asn Met Val Leu Phe Ala Pro Ile Ile Tyr Val Leu Gln Tyr Leu Glu			
	980	985	990
Lys Ala Gly Leu Leu Thr Glu Glu Ile Arg Ser Arg Ala Val Gly Phe			
	995	1000	1005
Leu Glu Ile Gly Tyr Gln Lys Glu Leu Met Tyr Lys His Ser Asn			
	1010	1015	1020
Gly Ser Tyr Ser Ala Phe Gly Glu Arg Asp Gly Asn Gly Asn Thr			
	1025	1030	1035
Trp Leu Thr Ala Phe Val Thr Lys Cys Phe Gly Gln Ala Gln Lys			
	1040	1045	1050
Phe Ile Phe Ile Asp Pro Lys Asn Ile Gln Asp Ala Leu Lys Trp			
	1055	1060	1065
Met Ala Gly Asn Gln Leu Pro Ser Gly Cys Tyr Ala Asn Val Gly			
	1070	1075	1080
Asn Leu Leu His Thr Ala Met Lys Gly Gly Val Asp Asp Glu Val			
	1085	1090	1095
Ser Leu Thr Ala Tyr Val Thr Ala Ala Leu Leu Glu Met Gly Lys			
	1100	1105	1110
Asp Val Asp Asp Pro Met Val Ser Gln Gly Leu Arg Cys Leu Lys			
	1115	1120	1125
Asn Ser Ala Thr Ser Thr Thr Asn Leu Tyr Thr Gln Ala Leu Leu			
	1130	1135	1140
Ala Tyr Ile Phe Ser Leu Ala Gly Glu Met Asp Ile Arg Asn Ile			
	1145	1150	1155
Leu Leu Lys Gln Leu Asp Gln Gln Ala Ile Ile Ser Gly Glu Ser			
	1160	1165	1170
Ile Tyr Trp Ser Gln Lys Pro Thr Pro Ser Ser Asn Ala Ser Pro			
	1175	1180	1185
Trp Ser Glu Pro Ala Ala Val Asp Val Glu Leu Thr Ala Tyr Ala			
	1190	1195	1200
Leu Leu Ala Gln Leu Thr Lys Pro Ser Leu Thr Gln Lys Glu Ile			
	1205	1210	1215
Ala Lys Ala Thr Ser Ile Val Ala Trp Leu Ala Lys Gln His Asn			
	1220	1225	1230
Ala Tyr Gly Gly Phe Ser Ser Thr Gln Asp Thr Val Val Ala Leu			
	1235	1240	1245
Gln Ala Leu Ala Lys Tyr Ala Thr Thr Ala Tyr Met Pro Ser Glu			
	1250	1255	1260
Glu Ile Asn Leu Val Val Lys Ser Thr Glu Asn Phe Gln Arg Thr			

## HYS-31CIP

1265	1270	1275
Phe Asn Ile Gln Ser Val	Asn Arg Leu Val Phe	Gln Gln Asp Thr
1280	1285	1290
Leu Pro Asn Val Pro Gly	Met Tyr Thr Leu Glu	Ala Ser Gly Gln
1295	1300	1305
Gly Cys Val Tyr Val Gln	Thr Val Leu Arg Tyr	Asn Ile Leu Pro
1310	1315	1320
Pro Thr Asn Met Lys Thr	Phe Ser Leu Ser Val	Glu Ile Gly Lys
1325	1330	1335
Ala Arg Cys Glu Gln Pro	Thr Ser Pro Arg Ser	Leu Thr Leu Thr
1340	1345	1350
Ile His Thr Ser Tyr Val	Gly Ser Arg Ser Ser	Ser Asn Met Ala
1355	1360	1365
Ile Val Glu Val Lys Met	Leu Ser Gly Phe Ser	Pro Met Glu Gly
1370	1375	1380
Thr Asn Gln Leu Leu Leu	Gln Gln Pro Leu Val	Lys Lys Val Glu
1385	1390	1395
Phe Gly Thr Asp Thr Leu	Asn Ile Tyr Leu Asp	Glu Leu Ile Lys
1400	1405	1410
Asn Thr Gln Thr Tyr Thr	Phe Thr Ile Ser Gln	Ser Val Leu Val
1415	1420	1425
Thr Asn Leu Lys Pro Ala	Thr Ile Lys Val Tyr	Asp Tyr Tyr Leu
1430	1435	1440
Pro Gly Ser Phe Lys Leu	Ser Gln Tyr Thr Ile	Val Trp Ser Met
1445	1450	1455
Asn Asn Asp Ser Ile Val	Asp Ser Val Ala Arg	His Pro Glu Pro
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Pro Pro Phe Lys Thr Glu	Ala Phe Ile Pro Ser	Leu Pro Gly Ser
1475	1480	1485

Val Asn Asn  
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<212> DNA  
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tcccagagac ctggctctgg gatctgtttc ctatttgtaa ctcggggaag gaggcgggtcc	180
acgtcacagt tcctgacgcc atcaccgagt ggaaggcgat gagtttctgc acttcccaga	240
caagaggctt cgggctttca cccactgttg gactaactgc tttcaagcca ttctttgttg	300
acctgactct cccttactca gtagtccgtg gggaatcctt tcgtcttact gccaccatct	360
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ttggacctga gccctgggta cagtgatgtt aaattcacgg ttactctgga gaccaaggac	180
aagaccaga agttgctaga atactctgga ctgaagaaga ggcacttaca ttgtatctcc	240
tttcttgtag cacctcctgc tggtagcaca gaagaagtgg ccacaatccg ggtgtcggga	300
gttggaata acatcagctt tgaggagaag aaaaagggtc taattcagag gcaggggaac	360
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gtagacctgt cttccaact ggcaccagag gcaatgctgg gcacctacac tgtggcagt	600
gctgagggca agaccttgg tactttcagt gtggaggaat atgtgtttc tccatttctc	660
cttttactct cttcagtgt gccgaagttt aagggtggaag tggtaggaac caaggagtta	720
tcaacgggtgc aggaatcttt cttagtaaag ggggggttgt aggtacacct atggaaagcc	780
catgctaggg gcagtgcagg tatctgtgtg tcagaaggca aatacttact ggtatcgaga	840
ggtggaacgg gaacagcttc ctgacaaatg caggaacctc tctggacaga ctgacaaaac	900
aggatgtttc tcagcacctg tggacatggc cacctttgac ctcatggat atgcgtacag	960
ccatcaaata aatattgtgg ctactgttgt ggaggaaggg acagggtgtg aggccaatgc	1020
cactcaaaat atctacattt ctccacaaat gggatcaatg acctttgaag acaccagcaa	1080
tttttaccat ccaaatttcc cttcagtgg gaagataaaa gataggggcc atgatgactc	1140
ctttctcaag aaccatttaa tggttctggg gatttaaggc acaaaatgaa cttttacca	1200
gaccctgggt taactgaaaa caaatgcgt atgcttcctc tacctttgga gaaatccccg	1260
gtggaaaggg acagaacgtt ctctggaggg aaagttttca ataggaaaac ttattatata	1320
atccggaaca aagggccacc gttactacca aaaaggccta acctgggcct gcgaaccctt	1380

## HYS-31CIP

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ccctgacca agagatcaac cttctcttac tattttaaat agggaaagga agtttggtga	1560
tggaggggca caaacacctg acctctaaga agaaaggact gaaagcctcc ttctctctct	1620
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gtcactacc ctatcaagt gctgagtatg atcagtgtcc agtgtctggc ccatgggact	1980
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Ser Pro Gly Tyr Ser Asp Val Lys Phe Thr Val Thr Leu Glu Thr Lys		
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ccc act gtt gga cta act gct ttc aag cca ttc ttt gtt gac ctg act	2513
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Tyr Thr Val Ala Val Ala Glu Gly Lys Thr Phe Gly Thr Phe Ser Val  
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Page 45

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Gly Gly Gly His Pro Glu Ala Phe Glu Ser Ser Thr Pro Leu His Gln  
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Ala Glu Asp Ser Gln Val Arg Gln Tyr Phe Pro Glu Thr Trp Leu Trp  
740 745 750

Asp Leu Phe Pro Ile Gly Asn Ser Gly Lys Glu Ala Val His Val Thr  
755 760 765

Val Pro Asp Ala Ile Thr Glu Trp Lys Ala Met Ser Phe Cys Thr Ser  
770 775 780

Gln Ser Arg Gly Phe Gly Leu Ser Pro Thr Val Gly Leu Thr Ala Phe  
785 790 795 800

Lys Pro Phe Phe Val Asp Leu Thr Leu Pro Tyr Ser Val Val Arg Gly  
805 810 815

Glu Ser Phe Arg Leu Thr Ala Thr Ile Phe Asn Tyr Leu Lys Asp Cys  
820 825 830

Ile Arg Val Arg Ala Gly Asp Thr Gly Ile Arg Cys Gln Pro Trp Asn  
835 840 845

His Thr Ser Pro Ile Thr Leu Ser Leu Asn Trp Lys His Pro Asn Phe  
850 855 860

Pro Trp Glu Arg Glu Glu Met Ser Ala Ser Gln Pro Pro Gly Phe Pro  
865 870 875 880

Arg Pro Leu Cys Thr Thr Ser Phe Val Cys Thr Leu Cys Leu Leu Asn  
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Ile Leu Arg Arg Phe Arg Leu Thr Trp Leu Asn Arg Met Ser Thr Ser  
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<211> 2739

<212> DNA

<213> homo sapiens

<400> 30

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ccagcccggc taaatttccc ctccgttcag aagggttgtt tggacctgag ccctgggtac 180

agtgatgtta aattcacggt tactctggag accaaggaca agaccagaa gttgctagaa 240

tactctggac tgaagaagag gcacttacat tgtatctcct ttcttgtagc acctcctgct 300

## HYS-31CIP

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attgcacagt	ggctggaagt	ggtacctgag	caaggcattg	tagacctgtc	cttccaactg	600
gcaccagagg	caatgctggg	cacctacact	gtggcagtgg	ctgagggcaa	gacctttggt	660
actttcagt	tggaggaata	tgtgctgccg	aagtttaagg	tggaaagtgg	ggaacccaag	720
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## HYS-31CIP

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 aagccattct ttgttgacct gactctccct tactcagtag tccgtgggga atcctttcgt 2460  
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 <212> PRT  
 <213> homo sapiens

<400> 31

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Arg Gly Glu Ser Phe Arg Leu Thr Ala Thr Ile Phe Asn Tyr  
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<400> 32

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 1 5 10 15

Tyr Phe Arg Ile Val Thr Met Asp Ser Asn Phe Val Pro  
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<210> 33  
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<400> 33

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Arg Leu Thr Ala Thr Ile Phe Asn Tyr Leu Lys  
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## HYS-31CIP

&lt;213&gt; homo sapiens

&lt;400&gt; 34

Val	Pro	Asp	Ala	Ile	Thr	Glu	Trp	Lys	Ala	Met	Ser	Phe	Cys	Thr	Ser
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Gln	Ser	Arg	Gly	Phe
			20	

&lt;210&gt; 35

&lt;211&gt; 13

&lt;212&gt; PRT

&lt;213&gt; homo sapiens

&lt;400&gt; 35

Phe	Ser	Val	Glu	Glu	Tyr	Val	Leu	Pro	Lys	Phe	Lys	Val
1				5					10			

&lt;210&gt; 36

&lt;211&gt; 10

&lt;212&gt; PRT

&lt;213&gt; homo sapiens

&lt;400&gt; 36

Arg	Gln	Tyr	Phe	Pro	Glu	Thr	Trp	Leu	Trp
1				5					10

&lt;210&gt; 37

&lt;211&gt; 17

&lt;212&gt; PRT

&lt;213&gt; homo sapiens

&lt;400&gt; 37

Phe	Leu	Val	Lys	Ile	Cys	Cys	Arg	Tyr	Thr	Tyr	Gly	Lys	Pro	Met	Leu
1				5					10					15	

Gly

&lt;210&gt; 38

&lt;211&gt; 30

&lt;212&gt; PRT

&lt;213&gt; homo sapiens

&lt;400&gt; 38

Met	Ile	Val	Tyr	Lys	Phe	Val	Pro	Val	Ser	Pro	Thr	Lys	Met	Trp	Ala
1				5					10					15	

Gln	Leu	Leu	Leu	Gly	Met	Leu	Ala	Leu	Ser	Pro	Ala	Ile	Ala
			20					25					30

&lt;210&gt; 39

&lt;211&gt; 882

&lt;212&gt; PRT

&lt;213&gt; homo sapiens

&lt;400&gt; 39

## HYS-31CIP

Glu	Glu	Leu	Pro	Asn	Tyr	Leu	Val	Thr	Leu	Pro	Ala	Arg	Leu	Asn	Phe	1	5	10	15
Pro	Ser	Val	Gln	Lys	Val	Cys	Leu	Asp	Leu	Ser	Pro	Gly	Tyr	Ser	Asp	20	25	30	
Val	Lys	Phe	Thr	Val	Thr	Leu	Glu	Thr	Lys	Asp	Lys	Thr	Gln	Lys	Leu	35	40	45	
Leu	Glu	Tyr	Ser	Gly	Leu	Lys	Lys	Arg	His	Leu	His	Cys	Ile	Ser	Phe	50	55	60	
Leu	Val	Pro	Pro	Pro	Ala	Gly	Gly	Thr	Glu	Glu	Val	Ala	Thr	Ile	Arg	65	70	75	80
Val	Ser	Gly	Val	Gly	Asn	Asn	Ile	Ser	Phe	Glu	Glu	Lys	Lys	Lys	Val	85	90	95	
Leu	Ile	Gln	Arg	Gln	Gly	Asn	Gly	Thr	Phe	Val	Gln	Thr	Asp	Lys	Pro	100	105	110	
Leu	Tyr	Thr	Pro	Gly	Gln	Gln	Val	Tyr	Phe	Arg	Ile	Val	Thr	Met	Asp	115	120	125	
Ser	Asn	Phe	Val	Pro	Val	Asn	Asp	Lys	Tyr	Ser	Met	Val	Glu	Leu	Gln	130	135	140	
Asp	Pro	Asn	Ser	Asn	Arg	Ile	Ala	Gln	Trp	Leu	Glu	Val	Val	Pro	Glu	145	150	155	160
Gln	Gly	Ile	Val	Asp	Leu	Ser	Phe	Gln	Leu	Ala	Pro	Glu	Ala	Met	Leu	165	170	175	
Gly	Thr	Tyr	Thr	Val	Ala	Val	Ala	Glu	Gly	Lys	Thr	Phe	Gly	Thr	Phe	180	185	190	
Ser	Val	Glu	Glu	Tyr	Val	Leu	Pro	Lys	Phe	Lys	Val	Glu	Val	Val	Glu	195	200	205	
Pro	Lys	Glu	Leu	Ser	Thr	Val	Gln	Glu	Ser	Phe	Leu	Val	Lys	Ile	Cys	210	215	220	
Cys	Arg	Tyr	Thr	Tyr	Gly	Lys	Pro	Met	Leu	Gly	Ala	Val	Gln	Val	Ser	225	230	235	240
Val	Cys	Gln	Lys	Ala	Asn	Thr	Tyr	Trp	Tyr	Arg	Glu	Val	Glu	Arg	Glu	245	250	255	
Gln	Leu	Pro	Asp	Lys	Cys	Arg	Asn	Leu	Ser	Gly	Gln	Thr	Asp	Lys	Thr	260	265	270	
Gly	Cys	Phe	Ser	Ala	Pro	Val	Asp	Met	Ala	Thr	Phe	Asp	Leu	Ile	Gly	275	280	285	
Tyr	Ala	Tyr	Ser	His	Gln	Ile	Asn	Ile	Val	Ala	Thr	Val	Val	Glu	Glu	290	295	300	
Gly	Thr	Gly	Val	Glu	Ala	Asn	Ala	Thr	Gln	Asn	Ile	Tyr	Ile	Ser	Pro	305	310	315	320
Gln	Met	Gly	Ser	Met	Thr	Phe	Glu	Asp	Thr	Ser	Asn	Phe	Tyr	His	Pro	325	330	335	

## HYS-31CIP

Asn	Phe	Pro	Phe	Ser	Gly	Lys	Ile	Arg	Val	Arg	Gly	His	Asp	Asp	Ser
			340					345					350		
Phe	Leu	Lys	Asn	His	Leu	Val	Phe	Leu	Val	Ile	Tyr	Gly	Thr	Asn	Gly
		355					360					365			
Thr	Phe	Asn	Gln	Thr	Leu	Val	Thr	Asp	Asn	Asn	Gly	Leu	Ala	Pro	Phe
	370					375					380				
Thr	Leu	Glu	Thr	Ser	Gly	Trp	Asn	Gly	Thr	Asp	Val	Ser	Leu	Glu	Gly
385					390					395					400
Lys	Phe	Gln	Met	Glu	Asp	Leu	Val	Tyr	Asn	Pro	Glu	Gln	Val	Pro	Arg
				405					410					415	
Tyr	Tyr	Gln	Asn	Ala	Tyr	Leu	His	Leu	Arg	Pro	Phe	Tyr	Ser	Thr	Thr
			420					425					430		
Arg	Ser	Phe	Leu	Gly	Ile	His	Arg	Leu	Asn	Gly	Pro	Leu	Lys	Cys	Gly
		435					440					445			
Gln	Pro	Gln	Glu	Val	Leu	Val	Asp	Tyr	Tyr	Ile	Asp	Pro	Ala	Asp	Ala
	450					455					460				
Ser	Pro	Asp	Gln	Glu	Ile	Ser	Phe	Ser	Tyr	Tyr	Leu	Ile	Gly	Lys	Gly
465					470					475					480
Ser	Leu	Val	Met	Glu	Gly	Gln	Lys	His	Leu	Asn	Ser	Lys	Lys	Lys	Gly
				485					490					495	
Leu	Lys	Ala	Ser	Phe	Ser	Leu	Ser	Leu	Thr	Phe	Thr	Ser	Arg	Leu	Ala
			500					505					510		
Pro	Asp	Pro	Ser	Leu	Val	Ile	Tyr	Ala	Ile	Phe	Pro	Ser	Gly	Gly	Val
		515					520					525			
Val	Ala	Asp	Lys	Ile	Gln	Phe	Ser	Val	Glu	Met	Cys	Phe	Asp	Asn	Gln
	530					535					540				
Val	Ser	Leu	Gly	Phe	Ser	Pro	Ser	Gln	Gln	Leu	Pro	Gly	Ala	Glu	Val
545					550					555					560
Glu	Leu	Gln	Leu	Gln	Ala	Ala	Pro	Gly	Ser	Leu	Cys	Ala	Leu	Arg	Ala
				565					570					575	
Val	Asp	Glu	Ser	Val	Leu	Leu	Leu	Arg	Pro	Asp	Arg	Glu	Leu	Ser	Asn
			580					585					590		
Arg	Ser	Val	Tyr	Gly	Met	Phe	Pro	Phe	Trp	Tyr	Gly	His	Tyr	Pro	Tyr
		595					600					605			
Gln	Val	Ala	Glu	Tyr	Asp	Gln	Cys	Pro	Val	Ser	Gly	Pro	Trp	Asp	Phe
	610					615					620				
Pro	Gln	Pro	Leu	Ile	Asp	Pro	Met	Pro	Gln	Gly	His	Ser	Ser	Gln	Arg
625					630					635					640
Ser	Ile	Ile	Trp	Arg	Pro	Ser	Phe	Ser	Glu	Gly	Thr	Asp	Leu	Phe	Ser
				645					650					655	
Phe	Phe	Arg	Asp	Val	Gly	Leu	Lys	Ile	Leu	Ser	Asn	Ala	Lys	Ile	Lys
			660					665					670		

## HYS-31CIP

Lys Pro Val Asp Cys Ser His Arg Ser Pro Glu Tyr Ser Thr Ala Met  
 675 680 685  
 Gly Ala Gly Gly Gly His Pro Glu Ala Phe Glu Ser Ser Thr Pro Leu  
 690 695 700  
 His Gln Ala Glu Asp Ser Gln Val Arg Gln Tyr Phe Pro Glu Thr Trp  
 705 710 715 720  
 Leu Trp Asp Leu Phe Pro Ile Gly Asn Ser Gly Lys Glu Ala Val His  
 725 730 735  
 Val Thr Val Pro Asp Ala Ile Thr Glu Trp Lys Ala Met Ser Phe Cys  
 740 745 750  
 Thr Ser Gln Ser Arg Gly Phe Gly Leu Ser Pro Thr Val Gly Leu Thr  
 755 760 765  
 Ala Phe Lys Pro Phe Phe Val Asp Leu Thr Leu Pro Tyr Ser Val Val  
 770 775 780  
 Arg Gly Glu Ser Phe Arg Leu Thr Ala Thr Ile Phe Asn Tyr Leu Lys  
 785 790 795 800  
 Asp Cys Ile Arg Val Arg Ala Gly Asp Thr Gly Ile Arg Cys Gln Pro  
 805 810 815  
 Trp Asn His Thr Ser Pro Ile Thr Leu Ser Leu Asn Trp Lys His Pro  
 820 825 830  
 Asn Phe Pro Trp Glu Arg Glu Glu Met Ser Ala Ser Gln Pro Pro Gly  
 835 840 845  
 Phe Pro Arg Pro Leu Cys Thr Thr Ser Phe Val Cys Thr Leu Cys Leu  
 850 855 860  
 Leu Asn Ile Leu Arg Arg Phe Arg Leu Thr Trp Leu Asn Arg Met Ser  
 865 870 875 880  
 Thr Ser

<210> 40  
 <211> 36  
 <212> PRT  
 <213> homo sapiens

<400> 40

Ser Lys Thr Thr Phe Gly Phe Pro Gly Tyr Gln Lys Glu Leu Met Tyr  
 1 5 10 15

Lys His Ser Asn Gly Ser Tyr Ser Ala Phe Gly Glu Arg Asp Gly Asn  
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Gly Asn Thr Trp  
 35

<210> 41  
 <211> 826  
 <212> PRT  
 <213> gallus gallus

## HYS-31CIP

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 20 25 30  
 Pro Gln Tyr Val Leu Met Val Pro Ala Val Leu Gln Ser Asp Ser Pro  
 35 40 45  
 Ser Gln Val Cys Leu Gln Phe Phe Asn Leu Asn Gln Thr Ile Ser Val  
 50 55 60  
 Arg Val Val Leu Glu Tyr Asp Thr Ile Asn Thr Thr Ile Phe Glu Lys  
 65 70 75 80  
 Asn Thr Thr Thr Ser Asn Gly Leu Gln Cys Leu Asn Phe Met Ile Pro  
 85 90 95  
 Pro Val Thr Ser Val Ser Leu Ala Phe Ile Ser Phe Thr Ala Lys Gly  
 100 105 110  
 Thr Thr Phe Asp Leu Lys Glu Arg Arg Ser Val Met Ile Trp Asn Met  
 115 120 125  
 Glu Ser Phe Val Phe Val Gln Thr Asp Lys Pro Ile Tyr Lys Pro Gly  
 130 135 140  
 Gln Ser Val Met Phe Arg Val Val Ala Leu Asp Phe Asn Phe Lys Pro  
 145 150 155 160  
 Val Gln Glu Met Tyr Pro Leu Ile Ala Val Gln Asp Pro Gln Asn Asn  
 165 170 175  
 Arg Ile Phe Gln Trp Gln Asn Val Thr Ser Glu Ile Asn Ile Val Gln  
 180 185 190  
 Ile Glu Phe Pro Leu Thr Glu Glu Pro Ile Leu Gly Asn Tyr Lys Ile  
 195 200 205  
 Ile Val Thr Lys Lys Ser Gly Glu Arg Thr Ser His Ser Phe Leu Val  
 210 215 220  
 Glu Glu Tyr Val Leu Pro Lys Phe Asp Val Thr Val Thr Ala Pro Gly  
 225 230 235 240  
 Ser Leu Thr Val Met Asp Ser Glu Leu Thr Val Lys Ile Cys Ala Val  
 245 250 255  
 Tyr Thr Tyr Gly Gln Pro Val Glu Gly Lys Val Gln Leu Ser Val Cys  
 260 265 270  
 Arg Asp Phe Asp Ser Tyr Gly Arg Cys Lys Lys Ser Pro Val Cys Gln  
 275 280 285  
 Ser Phe Thr Lys Asp Leu Asp Thr Asp Gly Cys Leu Ser His Ile Leu  
 290 295 300  
 Ser Ser Lys Val Phe Glu Leu Asn Arg Ile Gly Tyr Lys Arg Asn Leu  
 305 310 315 320  
 Asp Val Lys Ala Ile Val Thr Glu Lys Glu Gln Val Cys Asn Leu Thr  
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## 325

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## HYS-31CIP

660

665

670

Asp Met Gly Met Lys Phe Phe Thr Asn Ser Lys Ile Arg Gln Pro Thr		
675	680	685
Val Cys Thr Arg Glu Thr Val Arg Pro Pro Ser Tyr Phe Leu Asn Ala		
690	695	700
Gly Phe Thr Ala Ser Thr His His Val Lys Leu Ser Ala Glu Val Ala		
705	710	715
Arg Glu Glu Arg Gly Lys Arg His Ile Leu Glu Thr Ile Arg Glu Phe		
	725	730
Phe Pro Glu Thr Trp Ile Trp Asp Ile Ile Leu Ile Asn Ser Thr Gly		
	740	745
Lys Ala Ser Val Ser Tyr Thr Ile Pro Asp Thr Ile Thr Glu Trp Lys		
	755	760
Ala Ser Ala Phe Cys Val Glu Glu Leu Ala Gly Phe Gly Met Ser Val		
	770	775
Pro Ala Thr Leu Thr Ala Phe Gln Pro Phe Phe Val Asp Leu Thr Leu		
	785	790
Pro Tyr Ser Ile Ile His Gly Glu Asp Phe Leu Val Arg Ala Asn Val		
	805	810
Phe Asn Tyr Leu Asn His Cys Ile Lys Ile		
	820	825